

EXECUTION COPY

AGREEMENT AND PLAN OF MERGER

Among

AFFYMETRIX, INC.,

GMS ACQUISITION, INC.,

GENETIC MICROSYSTEMS, INC.,

JEAN MONTAGU
(as Stockholder Representative)

and

**THE STOCKHOLDERS SET FORTH ON THE SIGNATURE PAGES TO THIS
AGREEMENT**

Dated as of September 10, 1999

"Hazardous Substance" means any substance that is: (A) listed, classified or regulated pursuant to any Environmental Health and Safety Law; (B) any petroleum product or by-product, asbestos-containing material, lead-containing paint, polychlorinated biphenyls, radioactive material or radon; or (C) any other substance which may be the subject of regulatory action by any Government Entity in connection with any Environmental Health and Safety Law.

"Holdback" means 10% (or the maximum percentage permitted that is consistent with pooling of interests accounting treatment) of the aggregate number of shares of Parent Common Stock to be delivered by Parent at Closing, rounded down to the nearest whole share.

"Holdback Account" means the account maintained by the Escrow Agent pursuant to the terms of the Escrow Agreement in respect of the Holdback.

"HSR Act" shall mean the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended.

"Indemnified Party" shall have the meaning set forth in Section 10.7.

"Indemnifying Parties" shall have the meaning set forth in Section 10.7.

"Intellectual Property Rights" shall have the meaning set forth in Section 6.1(p).

"knowledge" with respect to the Company shall mean the actual knowledge of Jean Montagu, Stanley Rose, Peter Honkanen or Peter Lewis or to the knowledge that such individuals would reasonably be expected to have after reasonable inquiry arising after the conduct by such individuals of a reasonable investigation with respect to the facts or matters specified.

"Law" means any federal, state, local, foreign or international law, statute, ordinance, rule, regulation, treaty, judgment, order, injunction, decree, arbitration award, agency requirement, license or permit of any Governmental Entity.

"Massachusetts Articles of Merger" shall have the meaning set forth in Section 2.3.

"MBCL" shall have the meaning set forth in Section 2.1.

"Merger" shall have the meaning set forth in the Recitals.

"Merger Consideration" shall have the meaning set forth in Section 5.1(a).

(p) Intellectual Property.

(i) Set forth in Schedule 6.1(p)(i) of the Company Disclosure Schedule is a complete list of each of the following items (A) all patents and applications therefor, registrations of trademarks (including service marks) and applications therefor, and registrations of copyrights and applications therefor that are owned by the Company or licensed to the Company (collectively, "Company Intellectual Property Rights"), (B) all licenses, sublicenses, agreements and contracts relating to the Company Intellectual Property pursuant to which the Company is entitled to use any Company Intellectual Property owned by any third party ("Third Party Intellectual Property Licenses") excluding commercially available end-user computer software licenses, where the total license fees for such software do not exceed \$10,000 per license per calendar year, used in the normal course of business ("Commercial Software Licenses") and (C) all agreements under which the Company has granted any third party the right to use any Company Intellectual Property.

(ii) To the knowledge of the Company, excluding Commercial Software Licenses the Company is the owner of all intellectual property, including, without limitation, all Company Intellectual Property Rights, patents and patent applications, supplementary protection certificates and patent extensions, trademarks and trademark applications, service mark and service mark registrations, logos, commercial symbols, business name registrations, trade names, copyrights and copyright registrations, computer software, mask works and mask work registration applications, industrial designs and applications for registration of such industrial designs, including, without limitation, any and all applications for renewal, extensions, reexaminations and reissues of any of the foregoing intellectual property rights where applicable, inventions, biological materials, trade secrets, formulae, know-how, technical information, research data, research raw data, laboratory notebooks, procedures, designs, proprietary technology and information held or used in the business of the Company (the "Company Intellectual Property").

(iii) To the knowledge of the Company, (a) the Company is the sole legal and beneficial owner of all the Company Intellectual Property (except for Company Intellectual Property that is the subject of any Third Party Intellectual Property Licenses or the Commercial Software Licenses) and (b) all Company Intellectual Property is valid and subsisting.

(iv) The Company has not entered into any agreements, licenses or created any Encumbrances, leases, equities, options, restrictions, rights of first refusal, title retention agreements or other exceptions to title which affect the Company Intellectual Property or restrict the use by the Company of the Company Intellectual Property in any way.

(v) The Company is in compliance in all respects with Third Party Intellectual Property Licenses.

(vi) The Company is not, and will not be as a result of the execution, delivery or performance of this Agreement or the consummation of the Merger or the other transactions contemplated hereby in breach, violation or default of any Third Party Intellectual Property Licenses. The rights of the Company to the Company Intellectual Property will not be affected by the execution, delivery or performance of this Agreement or the consummation of the Merger or the other transactions contemplated hereby.

(vii) The Company has the right to license to third parties the use of Company Intellectual Property Rights.

(viii) All registrations and filings relating to Company Intellectual Property Rights are in good standing. All maintenance and renewal fees necessary to preserve the rights of the Company in respect of Company Intellectual Property Rights have been made. The registrations and filings relating to Company Intellectual Property Rights are proceeding and there are no facts of which the Company has knowledge which could significantly undermine those registrations or filings or reduce to a significant extent the scope of protection of any patents arising from such applications beyond that which ordinarily might occur in a patent prosecution proceeding.

(ix) The manufacturing, marketing, distribution or sale of any product currently manufactured, marketed, distributed or sold by, or identified for development by, the Company, licensees or sublicensees in the countries where the Company has conducted or proposes to conduct such activities, to the knowledge of the Company, does not and would not infringe, induce infringement or contributorily infringe the patents, patent applications, trademarks, trademark applications, service marks, service mark applications, copyrights, copyright applications, and proprietary trade names, publication rights, computer programs (including source code and object code), inventions, know-how, trade secrets, technology, processes, confidential information and all other intellectual property rights throughout the world (collectively, "Intellectual Property Rights") of any third party.

(x) To the knowledge of the Company, there are no allegations, claims or proceedings instituted or pending which challenge the rights possessed by the Company to use the Company Intellectual Property or the validity or effectiveness of the Company Intellectual Property, including without limitation any interferences, oppositions, cancellations or other contested proceedings.

(xi) To the knowledge of the Company, there are no outstanding claims or proceedings instituted or pending by any third party challenging the ownership, priority, scope or validity or effectiveness of any Company Intellectual Property.

(xii) To the knowledge of the Company, there are no Intellectual Property Rights of any third party that would be infringed by the continued practice of any technologies previously used or presently in use by the Company.

(xiii) To the knowledge of the Company, there is no unauthorized use, infringement or misappropriation of the Company Intellectual Property by any third party, including any employee or former employee of the Company.

(xiv) The Company has not granted any licenses, immunities, options or other rights to the Company Intellectual Property which could provide a third party with a defense to patent infringement proceedings, whether domestic or foreign.

(xv) The Company has taken commercially reasonable measures to maintain the confidentiality of the inventions, trade secrets, formulae, know-how, technical information, research data, research raw data, laboratory notebooks, procedures, designs, proprietary technology and information of the Company, and all other information the value of which to the Company is contingent upon maintenance of the confidentiality thereof. Without limiting the generality of the foregoing, (A) each employee of the Company and each consultant to the Company who has had access to proprietary information with respect to the Company has entered into an agreement suitable to vest ownership rights to any inventions, creations, developments, and works in the Company and has entered into an agreement for maintaining the confidential information of the Company and (B) each officer and director of the Company has entered into an agreement to maintain the confidential information of the Company, except for those individuals listed in Schedule 6.1(p)(xv) of the Company Disclosure Schedule whose involvement in the business of the Company is described with specificity therein.

(q) Year 2000 Compliance. (i) Items of hardware, software, firmware or embedded processes ("Systems") that are a part of, or are used in connection with, the business of the Company will be Year 2000 Compliant by December 31, 1999, (disregarding insurance or similar coverage or plans for making such Systems Year 2000 Compliant).

(ii) Based upon a reasonable inquiry of substantial suppliers, customers and service providers of the Company, to the knowledge of the Company, no supplier, customer or service provider of the Company will be unable to ensure that its Systems are Year 2000 Compliant.

(r) Title to Properties; Encumbrances. The Company does not own any real property. Schedule 6.1(r) of the Company Disclosure Schedule contains a complete and accurate list of all real property leases to which the Company is a party. The Company owns (i) all of the properties and assets (whether real, personal, or mixed and whether tangible or intangible) that it purports to own, including all of the properties and assets

RECEIVED TIMESER. 10. 5:18PM
PRINT TIMESER. 10. 5:19PM

IN WITNESS WHEREOF, this Agreement has been duly executed and delivered by the duly authorized officers of the parties hereto as of the date first written above.

AFFYMETRIX, INC.

By: [Signature]
Name: PERN HADJIC
Title: VP, GC, SECRETARY

GMS ACQUISITION, INC.

By: [Signature]
Name: Susan E. Stigel
Title: President
By: [Signature]
Name: Edward Hurwitz
Title: Treasurer

GENETIC MICROSYSTEMS, INC.

By: _____
Name: _____
Title: _____
By: _____
Name: _____
Title: Treasurer

100 00.20 000 212 660 1139

S. & C.

01

IN WITNESS WHEREOF, this Agreement has been duly executed and delivered by the duly authorized officers of the parties hereto as of the date first written above.

AFFYMETRIX, INC.


By: _____
Name:
Title:

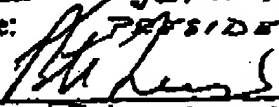
GMS ACQUISITION, INC.

By: _____
Name:
Title:

By: _____
Name:
Title: Treasurer

GENETIC MICROSYSTEMS, INC.

By: 
Name: JUAN MONTAYA
Title: PRESIDENT

By: 
Name: Peter Lewis
Title: Treasurer

NY12528:116584.5

-53-

Stockholder Representative
(on behalf of all of the stockholders of Genetic
MicroSystems, Inc.)

By:


Name: Jean Montagu


Stanley Rose


Peter Honkanen


Myles L. Mace, Jr.


Dominic Montagu


Sasha Mantagu

FROM : Panasonic FAX SYSTEM

PHONE NO. :

Jul. 25 1998 08:37 PM

08/98 18:04 FAX 212 588 1153

S & C.

002

Stockholder Representative
(on behalf of all of the stockholders of Genetic
MicroSystems, Inc.)

By:

Name: Jean Montagu

Stanley Rose

Peter Honkanen

Myles L. Mace, Jr.

Dominic Montagu

Sasha Montagu

Schedule DIntellectual Property of
Genetic Microsystems, Inc.

I. Patents and Patent Applications

P&R Ref.	S.N./Pat No.	Date	Title	Prior Art
A. <u>Scanners</u>				
002001				
U.S.	09/045,547	03/20/98	Wide Field Of View And High Speed Scanning Microscopy	N/A
011001				
U.S.	09/079,790	05/15/98	Focusing In Microscope Systems	09/079,324
020001				
U.S.	09/170,847	10/13/98	Wide Field Of View And High Speed Scanning Microscopy	09/045,547
02UWO1				
PCT	WO 99/06097	03/19/99	Wide Field Of View And High Speed Scanning Microscopy	09/045,547 09/170,847

All countries available to be designated were designated, i.e.:

AP: CH, GM, KE, LS, ME, SD, SZ, UC, ZW

EA: AM, AE, BY, KG, KZ, MD, RU, TJ, TM

EP: AT, BR, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

OA: BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National: AB, AL, AM, AT, AU, AZ, BA, BB, BG, BK, BY, CA, CH, CN, CU, CZ, DE,

DK, EE, ES, FI, GB, GR, GU, HM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,

KZ, LC, LK, LR, LS, LT, LU, LV, MD, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU,

SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, US, UZ, VN, YU, ZA, ZW

RECEIVED TIMESEP. 10. 5:52PM PRINT TIMESEP. 10. 6:02PM

September 10, 1999

Genetic MicroSystems, Inc.
34 Commerce Way
Woburn, MA 01801
Attention: Jean Montagu

Re: Merger of Genetic MicroSystems, Inc. ("GMS") with and into
GMS Corporation ("Merger Sub"), a Wholly Owned Subsidiary of
Affymetrix, Inc. ("Affymetrix") as a Result of which GMS becomes a
Wholly Owned Subsidiary of Affymetrix (the "Merger")

Dear Coco:

In connection with the Agreement and Plan of Merger, dated as of September 10, 1999, by and among Affymetrix, Merger Sub, GMS, you, as Shareholder Representative and the other stockholders listed therein (the "Merger Agreement"), and the transactions contemplated therein, GMS, Affymetrix and you agree to enter into an agreement governing the escrow of certain Affymetrix securities issued in connection with the Merger. The parties shall proceed to complete the negotiations of such agreement as soon possible, but in any event prior to September 17, 1999.

08/09/99 21:10 FAX 212 558 1153 S & C.

Please indicate your consent to the foregoing on the terms set forth above by signing and returning a copy of this letter.

Very truly yours,

AFFYMETRIX, INC.

By:

Name:

Title:

DEAN WARD
VP, GC, SECRETARY

AGREED TO:

GENETIC MICROSYSTEMS, INC.

By:

Name:
Title:

JEAN MONTAGU
PRESIDENT

Jean Montagu